

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents
 United States Patent and Trademark
 Office
 Box PCT
 Washington, D.C.20231
 ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 06 December 1999 (06.12.99)	
International application No. PCT/JP99/02226	Applicant's or agent's file reference 661099
International filing date (day/month/year) 27 April 1999 (27.04.99)	Priority date (day/month/year) 28 April 1998 (28.04.98)
Applicant KATO, Seishi et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
 15 November 1999 (15.11.99)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

☐ was not

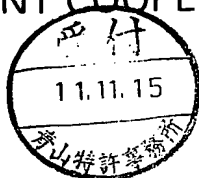
made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Diana Nissen Telephone No.: (41-22) 338.83.38
--	---

PATENT COOPERATION TREATY

WO 99/55862
PCT/JP99/02226

PCT



From the INTERNATIONAL BUREAU

NOTICE INFORMING THE APPLICANT OF THE COMMUNICATION OF THE INTERNATIONAL APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

To:

AOYAMA, Tamotsu
Aoyama & Partners
IMP Building, 3-7, Shiromi 1-chome
Chuo-ku
Osaka-shi
Osaka 540-0001
JAPON

Date of mailing (day/month/year)

04 November 1999 (04.11.99)

Applicant's or agent's file reference

661099

IMPORTANT NOTICE

International application No.

PCT/JP99/02226

International filing date (day/month/year)

27 April 1999 (27.04.99)

Priority date (day/month/year)

28 April 1998 (28.04.98)

Applicant

SAGAMI CHEMICAL RESEARCH CENTER et al

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:

AU,EP,JP,US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:

CA,MX

The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on 04 November 1999 (04.11.99) under No. WO 99/55862

REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a **demand for international preliminary examination** must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))

If the applicant wishes to proceed with the international application in the **national phase**, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Authorized officer

J. Zahra

Facsimile No. (41-22) 740.14.35

Telephone No. (41-22) 338.83.38

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF RECEIPT OF
RECORD COPY

(PCT Rule 24.2(a))

From the INTERNATIONAL BUREAU

To:

AOYAMA, Tamotsu
Aoyama & Partners
IMP Building, 3-7, Shiromi 1-chome
Chuo-ku
Osaka-shi
Osaka 540-0001
JAPON



Date of mailing (day/month/year)

28 May 1999 (28.05.99)

IMPORTANT NOTIFICATION

Applicant's or agent's file reference

661099

International application No.

PCT/JP99/02226

The applicant is hereby notified that the International Bureau has received the record copy of the international application as detailed below.

Name(s) of the applicant(s) and State(s) for which they are applicants:

SAGAMI CHEMICAL RESEARCH CENTER et al (for all designated States except US)

KATO, Seishi et al (for US)

International filing date : 27 April 1999 (27.04.99)

Priority date(s) claimed : 28 April 1998 (28.04.98)

Date of receipt of the record copy
by the International Bureau : 17 May 1999 (17.05.99)

List of designated Offices :

EP : AT,BE,CH,CY,DE,DK,ES,FI,FR,GB,GR,IE,IT,LU,MC,NL,PT,SE

National : AU,CA,JP,MX,US

ATTENTION

The applicant should carefully check the data appearing in this Notification. In case of any discrepancy between these data and the indications in the international application, the applicant should immediately inform the International Bureau.

In addition, the applicant's attention is drawn to the information contained in the Annex, relating to:

- ☒ time limits for entry into the national phase
- ☒ confirmation of precautionary designations
- ☒ requirements regarding priority documents

A copy of this Notification is being sent to the receiving Office and to the International Searching Authority.

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 740.14.35

Authorized officer:

Susumu Kubo

Telephone No. (41-22) 338.83.38

PATENT COOPERATION TREATY

PCT

NOTIFICATION CONCERNING
SUBMISSION OR TRANSMITTAL
OF PRIORITY DOCUMENT

(PCT Administrative Instructions, Section 411)

From the INTERNATIONAL BUREAU

To:

AOYAMA, Tamotsu
Aoyama & Partners
IMP Building, 3-7, Shiromi 1-chome
Chuo-ku
Osaka-shi
Osaka 540-0001
JAPON

Date of mailing (day/month/year)
23 June 1999 (23.06.99)

Applicant's or agent's file reference
661099

IMPORTANT NOTIFICATION

International application No.
PCT/JP99/02226

International filing date (day/month/year)
27 April 1999 (27.04.99)

International publication date (day/month/year)
Not yet published

Priority date (day/month/year)
28 April 1998 (28.04.98)

Applicant

SAGAMI CHEMICAL RESEARCH CENTER et al

1. The applicant is hereby notified of the date of receipt (except where the letters "NR" appear in the right-hand column) by the International Bureau of the priority document(s) relating to the earlier application(s) indicated below. Unless otherwise indicated by an asterisk appearing next to a date of receipt, or by the letters "NR", in the right-hand column, the priority document concerned was submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b).
2. This updates and replaces any previously issued notification concerning submission or transmittal of priority documents.
3. An asterisk(*) appearing next to a date of receipt, in the right-hand column, denotes a priority document submitted or transmitted to the International Bureau but not in compliance with Rule 17.1(a) or (b). In such a case, **the attention of the applicant is directed** to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.
4. The letters "NR" appearing in the right-hand column denote a priority document which was not received by the International Bureau or which the applicant did not request the receiving Office to prepare and transmit to the International Bureau, as provided by Rule 17.1(a) or (b), respectively. In such a case, **the attention of the applicant is directed** to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

<u>Priority date</u>	<u>Priority application No.</u>	<u>Country or regional Office or PCT receiving Office</u>	<u>Date of receipt of priority document</u>
28 April 1998 (28.04.98)	10/119395	JP	22 June 1999 (22.06.99)

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 740.14.35

Authorized officer

Carlos Naranjo

Telephone No. (41-22) 338.83.38

PCT REQUEST

661099

Original (for SUBMISSION) - printed on 20.04.1999 03:50:58 PM

0	For receiving Office use only	
0-1	International Application No.	
0-2	International Filing Date	
0-3	Name of receiving Office and "PCT International Application"	
0-4	Form - PCT/RO/101 PCT Request	
0-4-1	Prepared using	PCT-EASY Version 2.83 (updated 01.03.1999)
0-5	Petition The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty	
0-6	Receiving Office (specified by the applicant)	Japanese Patent Office (RO/JP)
0-7	Applicant's or agent's file reference	661099
I	Title of invention	HUMAN PROTEINS HAVING TRANSMEMBRANE DOMAINS AND DNAs ENCODING THESE PROTEINS
II	Applicant	
II-1	This person is:	applicant only
II-2	Applicant for	all designated States except US
II-4	Name	SAGAMI CHEMICAL RESEARCH CENTER
II-5	Address:	4-1, Nishi-Ohnuma 4-chome, Sagamihara-shi, Kanagawa 229-0012 Japan
II-6	State of nationality	JP
II-7	State of residence	JP
II-8	Telephone No.	(0427) 42-4692
II-9	Facsimile No.	(0427) 66-2846
III-1	Applicant and/or inventor	
III-1-1	This person is:	applicant only
III-1-2	Applicant for	all designated States except US
III-1-4	Name	PROTEGENE INC.
III-1-5	Address:	2-20-3, Naka-cho, Meguro-ku, Tokyo 153-0065 Japan
III-1-6	State of nationality	JP
III-1-7	State of residence	JP

PCT REQUEST

661099

Original (for SUBMISSION) - printed on 20.04.1999 03:50:58 PM

III-2	Applicant and/or inventor	
III-2-1	This person is:	applicant and inventor
III-2-2	Applicant for	US only
III-2-4	Name (LAST, First)	KATO, Seishi
III-2-5	Address:	3-46-50, Wakamatsu, Sagamihara-shi, Kanagawa 229-0014 Japan
III-2-6	State of nationality	JP
III-2-7	State of residence	JP
III-3	Applicant and/or inventor	
III-3-1	This person is:	applicant and inventor
III-3-2	Applicant for	US only
III-3-4	Name (LAST, First)	KIMURA, Tomoko
III-3-5	Address:	302, 4-1-28, Nishiikuta, Tama-ku, Kawasaki-shi, Kanagawa 214-0037 Japan
III-3-6	State of nationality	JP
III-3-7	State of residence	JP
IV-1	Agent or common representative; or address for correspondence	
	The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:	agent
IV-1-1	Name (LAST, First)	AOYAMA, Tamotsu
IV-1-2	Address:	AOYAMA & PARTNERS IMP Building, 3-7, Shiromi 1-chome, chuo-ku, Osaka-shi, Osaka 540-0001 Japan
IV-1-3	Telephone No.	(06) 6949-1261
IV-1-4	Facsimile No.	(06) 6949-0361
IV-2	Additional agent(s)	
IV-2-1	Name(s)	additional agent(s) with same address as first named agent TAMURA, Yasuo; IWASAKI, Mitsutaka
V	Designation of States	
V-1	Regional Patent (other kinds of protection or treatment, if any, are specified between parentheses after the designation(s) concerned)	EP: AT BE CH&LI CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE and any other State which is a Contracting State of the European Patent Convention and of the PCT
V-2	National Patent (other kinds of protection or treatment, if any, are specified between parentheses after the designation(s) concerned)	AU CA JP MX US

PCT REQUEST

661099


Original (for SUBMISSION) - printed on 20.04.1999 03:50:58 PM

V-5	Precautionary Designation Statement In addition to the designations made under items V-1, V-2 and V-3, the applicant also makes under Rule 4.9(b) all designations which would be permitted under the PCT except any designation(s) of the State(s) indicated under item V-6 below. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit.		
V-6	Exclusion(s) from precautionary designations	NONE	
VI-1	Priority claim of earlier national application		
VI-1-1	Filing date	28 April 1998 (28.04.1998)	
VI-1-2	Number	Patent Application No. 10-119395	
VI-1-3	Country	JP	
VI-2	Priority document request The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) identified above as item(s):	VI-1	
VII-1	International Searching Authority Chosen	European Patent Office (EPO) (ISA/EP)	
VIII	Check list	number of sheets	electronic file(s) attached
VIII-1	Request	4	-
VIII-2	Description (excluding sequence listing part)	61	-
VIII-3	Claims	1	-
VIII-4	Abstract	1	661099.txt
VIII-5	Drawings	9	-
VIII-6	Sequence listing part of description	42	-
VIII-7	TOTAL	118	
	Accompanying items	paper document(s) attached	electronic file(s) attached
VIII-8	Fee calculation sheet	✓	-
VIII-15	Nucleotide and/or amino acid sequence listing in computer readable form		separate diskette
VIII-16	PCT-EASY diskette	-	diskette
VIII-17	Other (specified):	Revenue stamps of transmittal fee for receiving office	-
VIII-18	Figure of the drawings which should accompany the abstract		
VIII-19	Language of filing of the international application	English	

PCT REQUEST

661099

Original (for SUBMISSION) - printed on 20.04.1999 03:50:58 PM

IX-1	Signature of applicant or agent	
IX-1-1	Name (LAST, First)	AOYAMA, Tamotsu

FOR RECEIVING OFFICE USE ONLY

10-1	Date of actual receipt of the purported international application	
10-2	Drawings:	
10-2-1	Received	
10-2-2	Not received	
10-3	Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application	
10-4	Date of timely receipt of the required corrections under PCT Article 11(2)	
10-5	International Searching Authority	ISA/EP
10-6	Transmittal of search copy delayed until search fee is paid	

FOR INTERNATIONAL BUREAU USE ONLY

11-1	Date of receipt of the record copy by the International Bureau	
------	--	--

PCT

661099
WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

3.13



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : C12N 15/12, C07K 14/47, C12N 5/10	A3	(11) International Publication Number: WO 99/55862 (43) International Publication Date: 4 November 1999 (04.11.99)
(21) International Application Number: PCT/JP99/02226 (22) International Filing Date: 27 April 1999 (27.04.99) (30) Priority Data: 10/119395 28 April 1998 (28.04.98) JP (71) Applicants (for all designated States except US): SAGAMI CHEMICAL RESEARCH CENTER [JP/JP]; 4-1, Nishi-Ohnuma 4-chome, Sagamihara-shi, Kanagawa 229-0012 (JP). PROTEGENE INC. [JP/JP]; 2-20-3, Naka-cho, Meguro-ku, Tokyo 153-0065 (JP). (72) Inventors; and (75) Inventors/Applicants (for US only): KATO, Seishi [JP/JP]; 3-46-50, Wakamatsu, Sagamihara-shi, Kanagawa 229-0014 (JP). KIMURA, Tomoko [JP/JP]; 302, 4-1-28, Nishiikuta, Tama-ku, Kawasaki-shi, Kanagawa 214-0037 (JP). (74) Agents: AOYAMA, Tamotsu et al.; Aoyama & Partners, IMP Building, 3-7, Shiromi 1-chome, Chuo-ku, Osaka-shi, Osaka 540-0001 (JP).		(81) Designated States: AU, CA, JP, MX, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report.</i> (88) Date of publication of the international search report: 2 March 2000 (02.03.00)
(54) Title: HUMAN PROTEINS HAVING TRANSMEMBRANE DOMAINS AND DNAS ENCODING THESE PROTEINS (57) Abstract A protein comprising any of the amino acid sequences represented by Sequence Nos. 1 to 9, a DNA coding for said protein, exemplified by a cDNA comprising any of the base sequences represented by Sequence Nos. 10 to 18, and an expression vector of said cDNA as well as an eucaryotic cell expressing said cDNA. Said protein and eucaryotic cell having said protein on the membrane surface can be provided by expression of a cDNA coding for a human protein having a transmembrane domain and of a recombinant of the human cDNA.		

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Larvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece			TR	Turkey
BG	Bulgaria	HU	Hungary	ML	Mali	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	NZ	New Zealand		
CM	Cameroon	KR	Republic of Korea	PL	Poland		
CN	China	KZ	Kazakstan	PT	Portugal		
CU	Cuba	LC	Saint Lucia	RO	Romania		
CZ	Czech Republic	LI	Liechtenstein	RU	Russian Federation		
DE	Germany	LK	Sri Lanka	SD	Sudan		
DK	Denmark	LR	Liberia	SE	Sweden		
EE	Estonia			SG	Singapore		

INTERNATIONAL SEARCH REPORT

International Application No

PCT/JP 99/02226

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 C12N15/12 C07K14/47 C12N5/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 C12N C07K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	HILLIER L. ET AL.: "WashU-NCI human EST Project." EMBL DATABASE ENTRY AA680184; ACCESSION NUMBER AA680184, 4 December 1997 (1997-12-04), XP002113993 abstract	1-6
A	YOKOYAMA-KOBAYASHI M. ET AL.: "A signal sequence detection system using secreted protease activity as an indicator." GENE, vol. 163, 1995, pages 193-196, XP002046435 cited in the application the whole document	1-6
	-/-	

☒ Further documents are listed in the continuation of box C.

☐ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

1 September 1999

Date of mailing of the international search report

17. 12. 99

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Mandl, B

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/JP 99/02226

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KYTE J. ET AL.: "A SIMPLE METHOD FOR DISPLAYING THE HYDROPATHIC CHARACTER OF A PROTEIN" JOURNAL OF MOLECULAR BIOLOGY, vol. 157, no. 1, 5 May 1982 (1982-05-05), pages 105-132, XP000609692 ISSN: 0022-2836 cited in the application the whole document ---	1-6
A	MORI K. ET AL.: "Kidney-specific expression of a novel mouse organic cation transporter-like protein." FEBS LETTERS, vol. 417, 1997, pages 371-374, XP002113977 the whole document ---	1-6
A	SCHÖMIG E. ET AL.: "Molecular cloning and characterization of two novel transport proteins from rat kidney." FEBS LETTERS, vol. 425, 20 March 1998 (1998-03-20), pages 79-86, XP002113994 the whole document ---	1-6
A	TASHIRO K. ET AL.: "Signal sequence trap: A cloning strategy for secreted proteins and type I membrane proteins." SCIENCE, vol. 261, 1993, pages 600-603, XP000673204 the whole document ---	1-6
P,A	YOKOYAMA-KOBAYASHI M. ET AL.: "Selection of cDNAs encoding putative type II membrane proteins on the cell surface from a human full-length cDNA bank." GENE, vol. 228, no. 1-2, 4 March 1999 (1999-03-04), pages 161-167, XP002113979 the whole document -----	1-6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP 99/02226

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

See extra sheet, Invention 1.

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International Application No. PCT/JP 99/02226

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

1. Claims: 1-6 (PARTIALLY)

Protein comprising SEQ.ID.1, DNA encoding it, cDNA comprising SEQ.ID.10 or SEQ.ID.19, expression vector and transformed cell capable of expressing said DNA or cDNA.

2. Claims: 1-6 (PARTIALLY)

Protein comprising SEQ.ID.2, DNA encoding it, cDNA comprising SEQ.ID.11 or SEQ.ID.21, expression vector and transformed cell capable of expressing said DNA or cDNA.

3. Claims: 1-6 (PARTIALLY)

Protein comprising SEQ.ID.3, DNA encoding it, cDNA comprising SEQ.ID.12 or SEQ.ID.23, expression vector and transformed cell capable of expressing said DNA or cDNA.

4. Claims: 1-6 (PARTIALLY)

Protein comprising SEQ.ID.4, DNA encoding it, cDNA comprising SEQ.ID.13 or SEQ.ID.25, expression vector and transformed cell capable of expressing said DNA or cDNA.

5. Claims: 1-6 (PARTIALLY)

Protein comprising SEQ.ID.5, DNA encoding it, cDNA comprising SEQ.ID.14 or SEQ.ID.27, expression vector and transformed cell capable of expressing said DNA or cDNA.

6. Claims: 1-6 (PARTIALLY)

Protein comprising SEQ.ID.6, DNA encoding it, cDNA comprising SEQ.ID.15 or SEQ.ID.29, expression vector and transformed cell capable of expressing said DNA or cDNA.

7. Claims: 1-6 (PARTIALLY)

Protein comprising SEQ.ID.7, DNA encoding it, cDNA comprising SEQ.ID.16 or SEQ.ID.31, expression vector and transformed cell capable of expressing said DNA or cDNA.

8. Claims: 1-6 (PARTIALLY)

Protein comprising SEQ.ID.8, DNA encoding it, cDNA comprising SEQ.ID.17 or SEQ.ID.33, expression vector and transformed cell capable of expressing said DNA or cDNA.

INTERNATIONAL SEARCH REPORT

International Application No. PCT/JP 99/02226

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

9. Claims: 1-6 (PARTIALLY)

Protein comprising SEQ.ID.9, DNA encoding it, cDNA
comprising SEQ.ID.18 or SEQ.ID.35, expression vector and
transformed cell capable of expressing said DNA or cDNA.

PATENT COOPERATION TREATY

PCT

REC'D 31 JUL 2000

WIPO

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

5

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 661099	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/JP99/02226	International filing date (day/month/year) 27/04/1999	Priority date (day/month/year) 28/04/1998
International Patent Classification (IPC) or national classification and IPC C12N15/12		
Applicant SAGAMI CHEMICAL RESEARCH CENTER et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 5 sheets, including this cover sheet.

- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 15/11/1999	Date of completion of this report 26.07.2000
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Petri, B Telephone No. +49 89 2399 7356 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/JP99/02226

I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

1-61 as originally filed

Claims, No.:

1-6 as originally filed

Drawings, sheets:

1/9-9/9 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application.
☒ claims Nos. 1-6, (partially).

because:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/JP99/02226

- ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):
- ☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 1-6, (partially) are so unclear that no meaningful opinion could be formed (*specify*):
- see separate sheet**
- ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
- ☒ no international search report has been established for the said claims Nos. 1-6, (partially).

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-6 (partially)
	No:	Claims	none
Inventive step (IS)	Yes:	Claims	none
	No:	Claims	1-6 (partially)
Industrial applicability (IA)	Yes:	Claims	none
	No:	Claims	1-6 (partially)

2. Citations and explanations

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/JP99/02226

Re Item I

Basis of the opinion

Reference is made to the following documents:

D1: TASHIRO K. ET AL.: 'Signal sequence trap: A cloning strategy for secreted proteins and type I membrane proteins.' SCIENCE, vol. 261, 1993, pages 600-603, XP000673204

D2: YOKOYAMA-KOBAYASHI M. ET AL.: 'A signal sequence detection system using secreted protease activity as an indicator.' GENE, vol. 163, 1995, pages 193-196, XP002046435 cited in the application

D3: MORI K. ET AL.: 'Kidney-specific expression of a novel mouse organic cation transporter-like protein.' FEBS LETTERS, vol. 417, 1997, pages 371-374, XP002113977

D4: SCHÖMIG E. ET AL.: 'Molecular cloning and characterization of two novel transport proteins from rat kidney.' FEBS LETTERS, vol. 425, 20 March 1998 (1998-03-20), pages 79-86, XP002113994

Re Item III

Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

Claims 1-6 (partially) referring to Inventions No. 2-9 (see Form ISA 210) have not been searched. Therefore no examination is carried out on said subject-matter.

Due to a lack of any technical effect (see below item V), it is impossible to establish an opinion with regard to the industrial applicability of subject-matter of claims 1-6.

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Subject-matter of claims 1-6 refers to a protein encoded by a cDNA (Seq. Id Nos. 1, 10, 19) from a not specified cDNA library derived from human stomach cancer.

Experimental evidence is provided that this protein may be a membrane protein, as the

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/JP99/02226

ORF is in vitro translatable into a protein of similar size of a protein found in the membrane fraction of COS-7 cells expressing said gene heterologously.

The subject-matter of claims 1-6 appears formally novel over the cited prior art (D1-D4).

However, besides the above evidence for being a putative membrane protein no further function has been established for the protein encoded by the cDNA. As a consequence said claimed sequences are not associated with any known technical effect.

Accordingly, the only underlying technical problem that can be recognized is the provision of further DNA sequences with sequence similarities to membrane proteins. This problem can be solved by application of standard methods known in the art (see D1-D4). In this case, any newly found DNA sequence encoding a membrane protein would present an equally suitable solution to this problem. Consequently, the claimed molecules as well as vectors and cells relating to them (claims 1-6) are considered to lack an inventive step, pursuant to Article 33(3) PCT.

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 661099	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/JP 99/ 02226	International filing date (day/month/year) 27/04/1999	(Earliest) Priority Date (day/month/year) 28/04/1998
Applicant SAGAMI CHEMICAL RESEARCH CENTER et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 6 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :



contained in the international application in written form.



filed together with the international application in computer readable form.



furnished subsequently to this Authority in written form.



furnished subsequently to this Authority in computer readable form.



the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.



the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☒ Unity of invention is lacking (see Box II).

4. With regard to the **title**,



the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,



the text is approved as submitted by the applicant.



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.



as suggested by the applicant.



because the applicant failed to suggest a figure.



because this figure better characterizes the invention.



None of the figures.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP 99/02226

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

See extra sheet, Invention 1.

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

1. Claims: 1-6 (PARTIALLY)

Protein comprising SEQ.ID.1, DNA encoding it, cDNA comprising SEQ.ID.10 or SEQ.ID.19, expression vector and transformed cell capable of expressing said DNA or cDNA.

2. Claims: 1-6 (PARTIALLY)

Protein comprising SEQ.ID.2, DNA encoding it, cDNA comprising SEQ.ID.11 or SEQ.ID.21, expression vector and transformed cell capable of expressing said DNA or cDNA.

3. Claims: 1-6 (PARTIALLY)

Protein comprising SEQ.ID.3, DNA encoding it, cDNA comprising SEQ.ID.12 or SEQ.ID.23, expression vector and transformed cell capable of expressing said DNA or cDNA.

4. Claims: 1-6 (PARTIALLY)

Protein comprising SEQ.ID.4, DNA encoding it, cDNA comprising SEQ.ID.13 or SEQ.ID.25, expression vector and transformed cell capable of expressing said DNA or cDNA.

5. Claims: 1-6 (PARTIALLY)

Protein comprising SEQ.ID.5, DNA encoding it, cDNA comprising SEQ.ID.14 or SEQ.ID.27, expression vector and transformed cell capable of expressing said DNA or cDNA.

6. Claims: 1-6 (PARTIALLY)

Protein comprising SEQ.ID.6, DNA encoding it, cDNA comprising SEQ.ID.15 or SEQ.ID.29, expression vector and transformed cell capable of expressing said DNA or cDNA.

7. Claims: 1-6 (PARTIALLY)

Protein comprising SEQ.ID.7, DNA encoding it, cDNA comprising SEQ.ID.16 or SEQ.ID.31, expression vector and transformed cell capable of expressing said DNA or cDNA.

8. Claims: 1-6 (PARTIALLY)

Protein comprising SEQ.ID.8, DNA encoding it, cDNA comprising SEQ.ID.17 or SEQ.ID.33, expression vector and transformed cell capable of expressing said DNA or cDNA.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

9. Claims: 1-6 (PARTIALLY)

Protein comprising SEQ.ID.9, DNA encoding it, cDNA
comprising SEQ.ID.18 or SEQ.ID.35, expression vector and
transformed cell capable of expressing said DNA or cDNA.

INTERNATIONAL SEARCH REPORT

International Application No.

JP 99/02226

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 C12N15/12 C07K14/47 C12N5/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 C12N C07K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	HILLIER L. ET AL.: "WashU-NCI human EST Project." EMBL DATABASE ENTRY AA680184; ACCESSION NUMBER AA680184, 4 December 1997 (1997-12-04), XP002113993 abstract	1-6
A	--- YOKOYAMA-KOBAYASHI M. ET AL.: "A signal sequence detection system using secreted protease activity as an indicator." GENE, vol. 163, 1995, pages 193-196, XP002046435 cited in the application the whole document --- -/--	1-6

☒ Further documents are listed in the continuation of box C.☐ Patent family members are listed in annex.

° Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- * & * document member of the same patent family

Date of the actual completion of the international search

1 September 1999

Date of mailing of the international search report

17. 12. 99

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Mandl, B

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KYTE J. ET AL.: "A SIMPLE METHOD FOR DISPLAYING THE HYDROPATHIC CHARACTER OF A PROTEIN" JOURNAL OF MOLECULAR BIOLOGY, vol. 157, no. 1, 5 May 1982 (1982-05-05), pages 105-132, XP000609692 ISSN: 0022-2836 cited in the application the whole document ---	1-6
A	MORI K. ET AL.: "Kidney-specific expression of a novel mouse organic cation transporter-like protein." FEBS LETTERS, vol. 417, 1997, pages 371-374, XP002113977 the whole document ---	1-6
A	SCHÖMIG E. ET AL.: "Molecular cloning and characterization of two novel transport proteins from rat kidney." FEBS LETTERS, vol. 425, 20 March 1998 (1998-03-20), pages 79-86, XP002113994 the whole document ---	1-6
A	TASHIRO K. ET AL.: "Signal sequence trap: A cloning strategy for secreted proteins and type I membrane proteins." SCIENCE, vol. 261, 1993, pages 600-603, XP000673204 the whole document ---	1-6
P,A	YOKOYAMA-KOBAYASHI M. ET AL.: "Selection of cDNAs encoding putative type II membrane proteins on the cell surface from a human full-length cDNA bank." GENE, vol. 228, no. 1-2, 4 March 1999 (1999-03-04), pages 161-167, XP002113979 the whole document -----	1-6